

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing Amendment, claims 1-26 are pending in the application, with claim 1 being the sole independent claim. New claims 24-26 have been added to recite a method for analyzing immunoassays utilizing the device of claim 1. Claims 1, 7, 10, and 19 have been amended to remove informalities and make the claims more definite. Claims 17 and 18 have been amended to more clearly represent further limitations of the device recited in claim 1. No new matter is introduced by the current Amendment. Entry of the foregoing amendment is respectfully requested.

Claim Objections

In the Office Action on page 2, paragraph 2, the Examiner objects to claims 17 and 18 as being of improper dependent form for failing to further limit the subject matter of a previous claim. Specifically, the Examiner asserts that claims 17 and 18 are drawn to method limitations, which are not interpreted as further limiting a claim drawn to a device. Applicants have amended claims 17 and 18 to be drawn to a device. Reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 112

In the Office Action on pages 2-3, paragraphs 3-8, the Examiner rejects claims 1-23 under 35 U.S.C. § 112, second paragraph, as being vague and indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Specifically, with respect to claim 1, the Examiner asserts that it is unclear if the base recited in

line 4 is part of the vessel itself or the device as a whole. Applicants have amended claim 1 to recite, in line 4, "...the vessel having a base comprised of a solid body...."

With respect to claim 7, the Examiner asserts that the recitation of "adapted" is not a positive limitation. To facilitate prosecution, Applicants have amended claim 7 to eliminate this recitation. It should be noted, however, that the recitation "for receiving a marking characterizing the content of the vessel" is a characteristic of the "one side edge," which is a positive limitation of "the attachment."

With respect to claim 10, Applicants have amended the claim to delete "at" before "the vessel."

With respect to claim 19, the Examiner asserts that Applicants have not recited in front of what the filter is installed. Applicants have amended the claims to recite that the polarization filter, receiving optic, and interference filter are installed in front of the filter.

Rejections under 35 U.S.C. § 102(b)

In the Office Action on page 3, paragraphs 9-10, the Examiner rejects claims 1-23 under 35 U.S.C. § 102(b) as being anticipated by Lekkala et al. (WO 95/22754). Applicants respectfully traverse this rejection.

The invention, as claimed in claim 1, relates to a device for analyzing immunoassays with a liquid assay medium. The device includes a vessel for holding the assay medium. The vessel has a base comprised of a solid body and the solid body has a first side wall and a top surface that constitutes a bottom surface of the vessel and forms a boundary surface of the solid body. In the

vessel, first reaction agents are dissolved in the assay medium and are labeled with a luminophore or different luminophores and second reaction agents are bonded to the boundary surface within a boundary layer of the assay medium. The device, as claimed in claim 1, also includes a transmitter for emitting light rays that are coupled into the base via the first side wall and conducted at a total reflection angle to the boundary surface so that luminophore-labeled first reaction agents that are bonded to the second reaction agents are optically excited by at least some of the light rays and emit fluorescent and/or phosphorescent rays. The device of claim 1 also includes a receiver positioned for quantitatively detecting the fluorescent and/or phosphorescent rays.

As per claim 1, the Examiner asserts that Lekkala teaches a device for carrying out analysis, comprising an analysis well for receiving a substance to be analyzed. Lekkala however, does not teach a device according to the present invention as recited in claim 1.

Specifically, Lekkala does not disclose "a transmitter for emitting light rays that are coupled into the base of the vessel via the first side wall and conducted at a total reflection angle to the boundary surface so that luminophore-labeled first reaction agents that are bonded to the second reaction agents are optically excited by at least some of the light rays and emit at least one of fluorescent and phosphorescent rays" as recited in claim 1. The present invention is a device that includes a receiver for detecting the fluorescent and/or phosphorescent rays that are emitted when luminophore-labeled first reaction agents that are bonded to the second reaction agents are optically excited by at least some of the light rays emitted by the transmitter.

To the contrary, Lekkala includes a layer (4) that is deposited in an analysis well (1). This layer preferably takes the form of a gold film and is suitable for generating a surface plasmon resonance (SPR) signal. The SPR signal indicates the lack of a light reflected by the layer when light is radiated into the layer. When light is radiated into the layer (4), a free electron plasma is generated in the layer. Owing to this plasma, a resonance effect (SPR) prevents light radiated in at a predetermined angle from being reflected back by the layer. In the reaction space (2) of the analysis well, which contains the molecules to be analyzed, an evanescent field is generated. This evanescent field influences the resonance effect, which in turn influences the SPR signal that is measured. Thus, Lekkala at best teaches measuring the lack of reflected light by using a gold film to generate an SPR signal that can be influenced by an evanescent field.

Lekkala is therefore fundamentally different in both design and function from the invention defined by claim 1. In view of the above, claim 1 is believed to be patentable over Lekkala for at least the reason that Lekkala does not teach "a transmitter for emitting light rays that are coupled into the base of the vessel via the first side wall and conducted at a total reflection angle to the boundary surface so that luminophore-labeled first reaction agents that are bonded to the second reaction agents are optically excited by at least some of the light rays and emit at least one of fluorescent and phosphorescent rays." For at least the reasons discussed with reference to claim 1, claims 2-16 and 19-23 are also patentable over the applied reference. Thus, Applicants respectfully request reconsideration and withdrawal of this rejection.

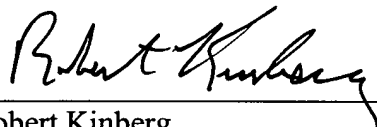
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes for any reason that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned.

Prompt and favorable consideration of this Amendment and the allowance of claims 1-23 are respectfully requested.

Respectfully submitted,

Date: 5/12/03



Robert Kinberg
Registration No. 26,924
Daniel G. Vivarelli, Jr.
Registration No. 51,137
VENABLE
P.O. Box 34385
Washington, D.C. 20043-9998
Telephone: (202) 962-4800
Telefax: (202) 962-8300

Version with markings to show changes made

In the Claims:

Please amend claims 1, 7, 10, and 17-19 as follows:

1. (Amended) A device for analyzing immunoassays with a liquid assay medium, comprising:

a vessel for holding the assay medium, ~~and the vessel~~ having a base comprised of a solid body, the solid body having a first side wall and a top surface constituting a bottom surface of the vessel and forming a boundary surface of the solid body, wherein first reaction agents are dissolved in the assay medium in the vessel and are labeled with a luminophore or different luminophores and second reaction agents are bonded to the boundary surface within a boundary layer of the assay medium;

a transmitter for emitting light rays that are coupled into the base of the vessel via the first side wall and conducted at ~~the~~ total reflection angle to the boundary surface so that luminophore-labeled first reaction agents that are bonded to the second reaction agents are optically excited by at least some of the light rays and emit at least one of fluorescent and phosphorescent rays; and

a receiver positioned for quantitatively detecting the at least one of the fluorescent rays and phosphorescent rays.

7. (Amended) The device according to claim 5, wherein the attachment has one side edge

~~adapted~~ for receiving a marking characterizing the content of the vessel.

10. (Amended) The device according to claim 9, wherein ~~at~~ the vessel is comprised of polystyrene.

17. (Amended) The device according to claim 16, wherein ~~two different first' reaction agents are labeled with~~ the different luminophores include first and second luminophores, the first luminophores hav~~ing~~e a high fluorescence and low phosphorescence and the second luminophores hav~~ing~~e high phosphorescence and a low fluorescence.

18. (Amended) The device according to claim 16, wherein the receiver detects the first reaction agents ~~are detected~~ with a time delay such~~in~~ that the fluorescent rays from the first luminophores are recorded during the emission of the transmitting light pulses and the phosphorescent rays from the second luminophores are recorded during the transmitting breaks.

19. (Amended) The device according to claim 1, wherein the receiver is one of a photo-multiplier, a PIN detector, and an avalanche diode, and includes a polarization filter, a receiving optic, and an interference filter installed in front of the receiver.